

REMARKS

I. Preliminary Remarks

Independent claims 1, 15, 22, 26, 27, and 31 have been amended to clarify that the audio signal, as originally recited, related to a full audible frequency band containing or including a lower frequency portion corresponding to the bass content. As such, the above amendments to independent claims 1, 15, 22, 26, 27, and 31 do not limit the scope of the claims; rather the above amendment clarifies that the audio input signal, as originally recited, has a range of frequencies where a lower portion of the range includes a bass content. Claims 32-36 have been cancelled. Claims 1-31 are pending.

Applicant wishes to express his appreciation to the Examiner for January 7, 2004 telephone interview. The above amendments to the claims and the following remarks are in accordance with the material discussed in the telephone interview.

II. 103(a) References Cited

A. Claims 1-14:

According to the Office Action, claims 1, 2, and 9-12 are rejected under 35 U.S.C. 103 as being unpatentable over Kimura (US Patent No. 5,172,358) in view of House (US Patent No. 4,809,338). Briefly, the Office Action asserts that Kimura teaches a feed-forward approach to adjust the low frequency boost while House teaches a feedback approach to adjust the low frequency boost as described in Figure 2 and Col. 4, line 5 to Col. 5, line 17. The Office Action then asserts that it would have been obvious to combine the feed forward method and low-pass frequency boosting circuit as described by Kimura with the inverse frequency response as disclosed by House in order to enhance the sound quality at lower signal levels.

Applicant respectfully traverses this ground of rejection for the reasons set forth below.

First, there is no suggestion or motivation to combine the teachings of Kimura and House. Kimura is directed to compensating for the well known Fletcher-Munson Characteristics where

as the audio signal level is lowered, the responsiveness of the human ear decreases. Kimura discusses this relationship in column 1, lines 14-25 and in Figure 6. In contrast, House is directed to audio responsiveness for an automotive vehicle, which has its unique constraints because of the small enclosed nature of the automobile along with other design constraints as discussed in column 1, lines 25-68. With such design constraints, House is directed to compensating for the frequency response characteristics as shown in Figure 3, which is different or moving away from the Fletcher-Munson characteristics. That is, House is directed to design of audio system for an automotive vehicle, and to do so, it moves away from the equalization based upon the Fletcher-Munson characteristics. According to MPEP Section 2145 (X)(D)(2), references cannot be combined where reference teaches away from their combination. Here, one skilled in the art would not look to combine the teachings of House with Kimura because Kimura is directed to compensating for the Fletcher-Munson characteristics, whereas House is moving away from using the Fletcher-Munson characteristics to compensate for the frequency responsiveness.

In addition, as indicated in the Office Action, Kimura is directed to a feedforward approach while House is directed to a feedback approach. In the background of this application, the applicant distinguishes US Patent. No. 4,809,338 issued to House because it teaches a feedback circuit to detect and adjust the bass levels. That is, House teaches away from the teachings of Kimura (the feedforward approach). As such, there is no suggestion or motivation to combine the Kimura and House to obviate the rejected claims 1, 2, and 9-12 under 35 U.S.C. 103 because House teaches away from using the Fletcher-Munson Characteristics (as taught by House) to compensate for the frequency response, and House teaches away from the using feedforward approach (as taught by House).

Second, even if Kimura and House could be combined, they do not obviate claims 1, 2, and 9-12 under 35 U.S.C. 103. As indicated by the Office Action, Kimura does not teach the frequency of the filter circuit inversely related to the input audio signal. In addition, Kimura discloses that the digital low-pass filter 13 extracts a low frequency component only in the output data of the volume 11 and supplies it to a level detection circuit 16. See Col. 2, lines 61 to 64.

The same is true for the high frequency component. See Col. 3, lines 1 to 4. Alternatively, Kimura discloses detecting sound pressure level by a microphone in column 4, lines 58-66, but such a system would be a feedback approach rather than a feed forward approach.

In contrast, claim 1 of this application recites that the corner frequency is adjusted in an inverse relationship to the input audio signal rather than based only the low frequency level or bass level portion of the audio signal. As clarified in the above amendment, the input audio signal relates to a full audible frequency band containing a lower frequency portion corresponding to the bass content. As such, the claimed invention according to claim 1 is directed to adjusting the corner frequency based on the audio signal rather than just the bass portion.

With regard to House, it is directed to an audio system for an automotive vehicle compensating for the frequency response characteristics as shown in Figure 3. The frequency response characteristics shown in Figure 3, however, is not inversely related as recited in claim 1. For instance, Figure 3 shows that sound pressure level continues to drop off at higher frequency so that at high frequency the frequency response is not inversely related. Note that in Figure 6 of Kimura, the sound pressure level increases at higher frequencies. Accordingly, even if Kimura and House could be combined, the two references do not teach or suggest "coupling the output voltage of the voltage detector to a filter circuit for adjusting a corner frequency associated with the filter circuit such that the corner frequency is inversely related to the input audio signal for boosting the bass content of the input audio signal," as recited in part in claim 1. Accordingly, independent claim 1 and its dependent claims 2-14 are allowable over the cited references.

B. Pending Claims 15-31:

With regard to pending claims 15-31, the Office Action principally relies on Kimura and House, along with other secondary references to reject the claims as being obvious. For the reasons set forth above, pending claims are allowable because none of the cited references teach or suggest adjusting the corner frequency such that the corner frequency is

inversely related to the audio input signal. In particular, with regard to independent claim 15, even if Kimura and House could be combined, they do not teach the step of "shifting the corner frequency ..." as in part in claim 15. As such, independent claim 15 and its dependent claims 16-21 are allowable for this distinction as well over the cited references.

In view of the foregoing, it is respectfully submitted that the claims in the application patentably distinguish over the cited and applied references and are in condition for allowance. Reexamination and reconsideration of the application, as amended, are respectfully requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is respectfully requested to call Applicant's undersigned representative at (213) 689-5176 to discuss the steps necessary for placing the application in condition for allowance.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 07-1853. Should such additional fees be associated with an extension of time, applicant respectfully requests that this paper be considered a petition therefore.

Respectfully submitted,



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